Sequences & Series

1) The general term of the sequence 2/1, 3/2, 4/3, … is an

    A) $\dfrac{n+1}{n}$

    B) $\dfrac{n}{n+1}$

    C) $\dfrac{n}{n-1}$

    D) $\dfrac{n-1}{n}$

2) If a, a+d, a+2d, …… is A.P, then an =

    A) a + nd
    B) a – nd
    C) a + (n – 1)d
    D) a + (n + 1)d

3) $\dfrac{a^{n+1}+b^{n+1}}{a^n+b^n}$ is arithmetic mean between a and b if n =

    A) –1
    B) 1
    C) 0
    D) 2

4) If A,. G, H are A.M, G.M, and H.M between two numbers, then

    A) A < G < H
    B) A < G > H
    C) A > G > H
    D) A > G < H

5) The harmonic mean between two numbers a and b is

    A) $\pm\sqrt{ab}$

    B) $\dfrac{a+b}{2}$

    C) $\dfrac{2ab}{a+b}$

    D) $\dfrac{2ab}{a-b}$

6) The arithmetic mean between 4 and 6 is

    A) $\sqrt{24}$
    B) $-\sqrt{24}$
    C) 24/5
    D) 5

7) If a is the first term and r < 1 is common ratio of G.P, then Sn =

    A) $\dfrac{a(1-r^n)}{1-r}$

    B) $\dfrac{a(1+r^n)}{1+r}$

    C) ar^n

    D) $\dfrac{a(1-r^n)}{1+r}$

8) An infinite geometric series is convergent if

    A) $|r|<1$

    B) r > 1
    C) r = 1
    D) Both B and C are correct

9) If a is the first term and r is the common ration of G.P then an =

    A) ar^{n-1}

    B) ar^{n+1}

    C) $\dfrac{a(1-r^n)}{1-r}$

    D) $\dfrac{a(1+r^n)}{1+r}$

10) $\dfrac{a^{n+1}+b^{n+1}}{a^{n}+b^{n}}$ is H.M between a and b if

    A) n = 0
    B) n = 1
    C) n = -1
    D) n = 2

11) If a is the first term and r is common ratio such that
r < 1, then S_∞ =

    A) $\dfrac{a}{1-r}$

    B) $\dfrac{a}{1+r}$

    C) $\dfrac{a(1-r^{n})}{1-r}$

    D) $\dfrac{a(1+r^{n})}{1+r}$

12) The harmonic mean between 9 and 11 is

    A) 10
    B) $\pm\sqrt{99}$
    C) $-\sqrt{99}$
    D) 99/5

13) If A, G, H are arithmetic mean, geometric and harmonic mean between a and b, then

    A) $G^{2}=AH$
    B) $A^{2}=GH$
    C) $H^{2}=AG$
    D) None of these

14) -1, 1, -1, 1, …. is

    A) Arithmetic Sequence
    B) Geometric Sequence
    C) Alternating Sequence
    D) Harmonic Sequence

15) The geometric mean between 8/9, 9/8 is

    A) + 1
    B) – 1
    C) ± 1
    D) $\dfrac{8}{17}$

16) A sequence is a function whose domain is

    A) the set of rational numbers
    B) The set of irrational numbers
    C) The set of integers
    D) The set of natural numbers

17) The geometric mean between a and b is

    A) $\dfrac{a+b}{2}$

    B) $\pm\sqrt{ab}$

    C) $\dfrac{2ab}{a+b}$

    D) $\dfrac{a+b}{2ab}$

18) The arithmetic mean between a and b is

    A) $\dfrac{2ab}{a+b}$

    B) $\dfrac{a+b}{2ab}$

    C) $\dfrac{a+b}{2}$

    D) $\pm\sqrt{ab}$

19) Which of the following series is convergent.

    A) 2 – 6 + 18 - ……
    B) 8 + 4 + 2 + …….
    C) 5 + 10 + 20 + …….
    D) 3/2 + 3 + 6 + ……..

20) If a = 3, r = 2/3, then sum of infinite S_∞ =

    A) 9
    B) $\dfrac{9}{2}$

    C) $\dfrac{2}{9}$

    D) $\dfrac{3}{2}$

21) If 2 + 1 + ½ + ….. is infinite geometric series then S_∞

    A) 2
    B) 4

C) ½

D) ¼

22) The population of a town increases geometrically at the rate of 4% per year. If the present population is 100,000, then population after 4 years will be

A) $100,000 (1 + .04)^3$
B) $100,000 (1 + .04)^4$
C) $100,000 (1 - 0.04)^3$
D) $100,000 (1 - 0.04)^4$

23) The sum of n terms of arithmetic series S_n =

A) $n/2[2a + (n - 1)d]$
B) ar^{n-1}
C) $\dfrac{a(1 - r^n)}{1 - r}$
D) $a + (n - 1)d$

24) The two arithmetic means between 5 and 35 are

A) 15, 25
B) 10, 20
C) 10, 15
D) 10, 25

25) If 2b – 1, 4b + 1, 15b – 3 is a geometric series,

then b =

A) 4
B) 3
C) 2
D) 1

26) Which of the following is a geometric series?

A) 5, 7, 9, 11, …..
B) 3, 5, 7, 9…….
C) 1, 1/3, 3, 9, …..
D) 9, 3, 1, 1/3, ……

27) The general term of the sequence 3, 6, 9, 12 ….. is

A) n
B) 2n
C) 3n
D) n^2

28) Which of the following is harmonic sequence?

A) 3, 5, 7 ……
B) ½, ¼, 1/8, …..
C) ½, 1/3, ¼ ……
D) 3, 9, 27 …..

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Written by NAUMAN IDREES
(nomi255@yahoo.com)
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ICMS College System Hayatabad, Peshawar